



Climate change and human health: Assessing the effectiveness of adaptation to heat waves

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Abstract:

Conservative estimates of excess mortality during heat waves can be obtained by counting the cases where death is attributed directly to heat stresses. Recent epidemiologic studies, however, have uncovered much more pronounced increases in deaths, especially for cardiovascular, cerebrovascular, and respiratory causes and especially among the elderly, on hot days. In this paper, we wish to find out whether heat alerts issued to the population by the National Weather Service (NWS) can offset such excess mortality. To answer this question, we use a panel of daily mortality and weather data covering 86 US counties--the 50 major MSAs, plus cities where the local NWS Weather adopted an additional forecasting system that predicts excess mortality due to the heat--from 1985 to 2005. The study period covers years before and after the implementation of the heat alert policy by the NWS in Summer 1993. The NWS heat alert policy applies under specific heat index and nighttime lows conditions, allowing us to apply a regression discontinuity design. We find that--unconditionally on heat alerts--in extremely hot days cardiovascular and respiratory mortality increases among the elderly. The effect is mitigated considerably by the presence of air conditioning in homes, and varies appreciably across regions of the country. When we include NWS alerts in our regressions, we find that their effectiveness is the highest in the Midwest, Northeast and Mid-Atlantic. Neither heat nor heat alert have much of an effect on mortality in the South, presumably because of acclimatization and behaviors. These are potentially important results for assessing adaptation options to reduce the adverse health effects of climate change.

Source:

https://pdfs.semanticscholar.org/d29a/ab5569af8a1020397f4c80fb565c9c8b7be9.pdf?_ga=1.95785884.1076425471.1487012098

Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors, Temperature, Other Exposure

Air Pollution: Interaction with Temperature, Ozone

Temperature: Extreme Heat

Other Exposure: dew point; apparent temperature

Geographic Feature:

resource focuses on specific type of geography

Rural, Urban

Geographic Location:

resource focuses on specific location

Climate Change and Human Health Literature Portal

United States

Health Impact:

specification of health effect or disease related to climate change exposure

Injury, Other Health Impact

Other Health Impact: heat related mortality; cardiorespiratory mortality ; cancer mortality

Intervention:

strategy to prepare for or reduce the impact of climate change on health

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Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Population of Concern: A focus of content

Population of Concern:

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content